

MOBILETT Plus/ Plus E

SP

Wiring Diagram

From Serial No. MOBILETT Plus; 3200
MOBILETT Plus E; 10900

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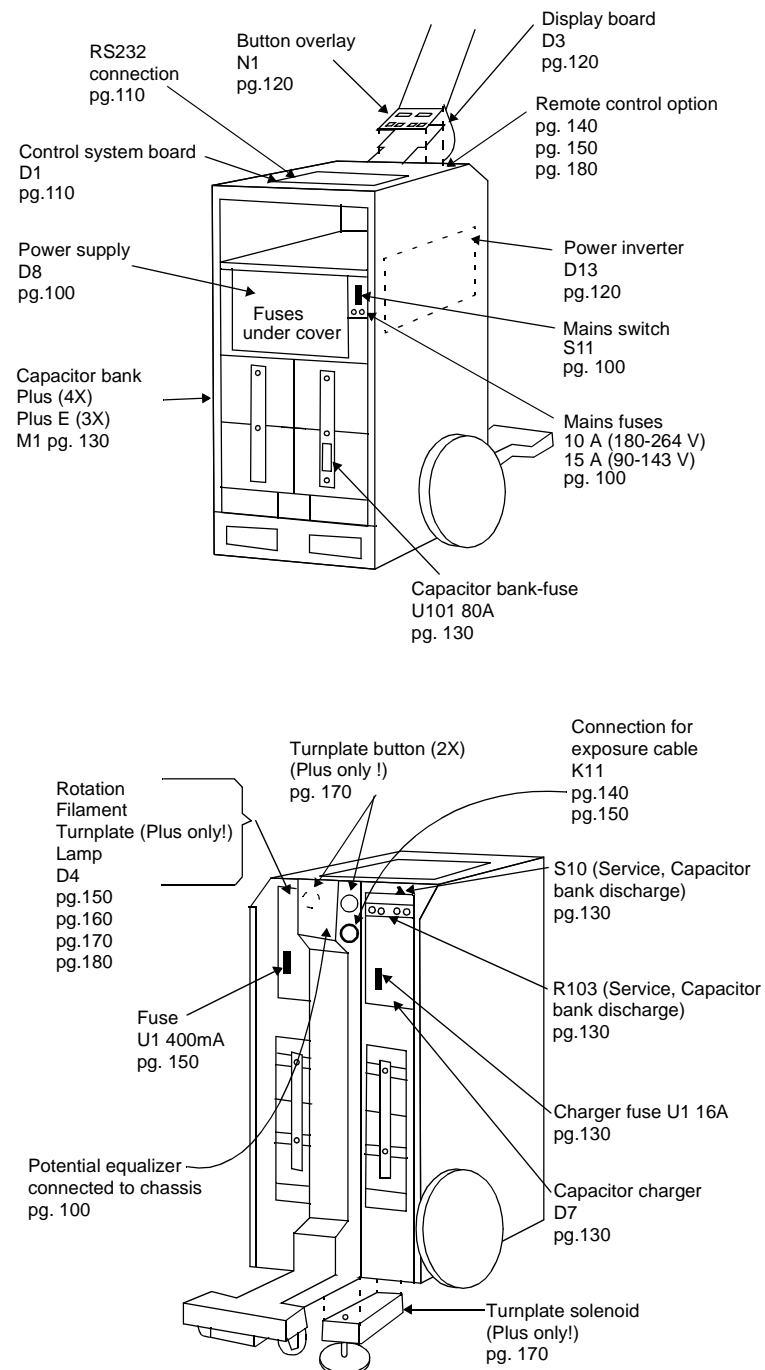
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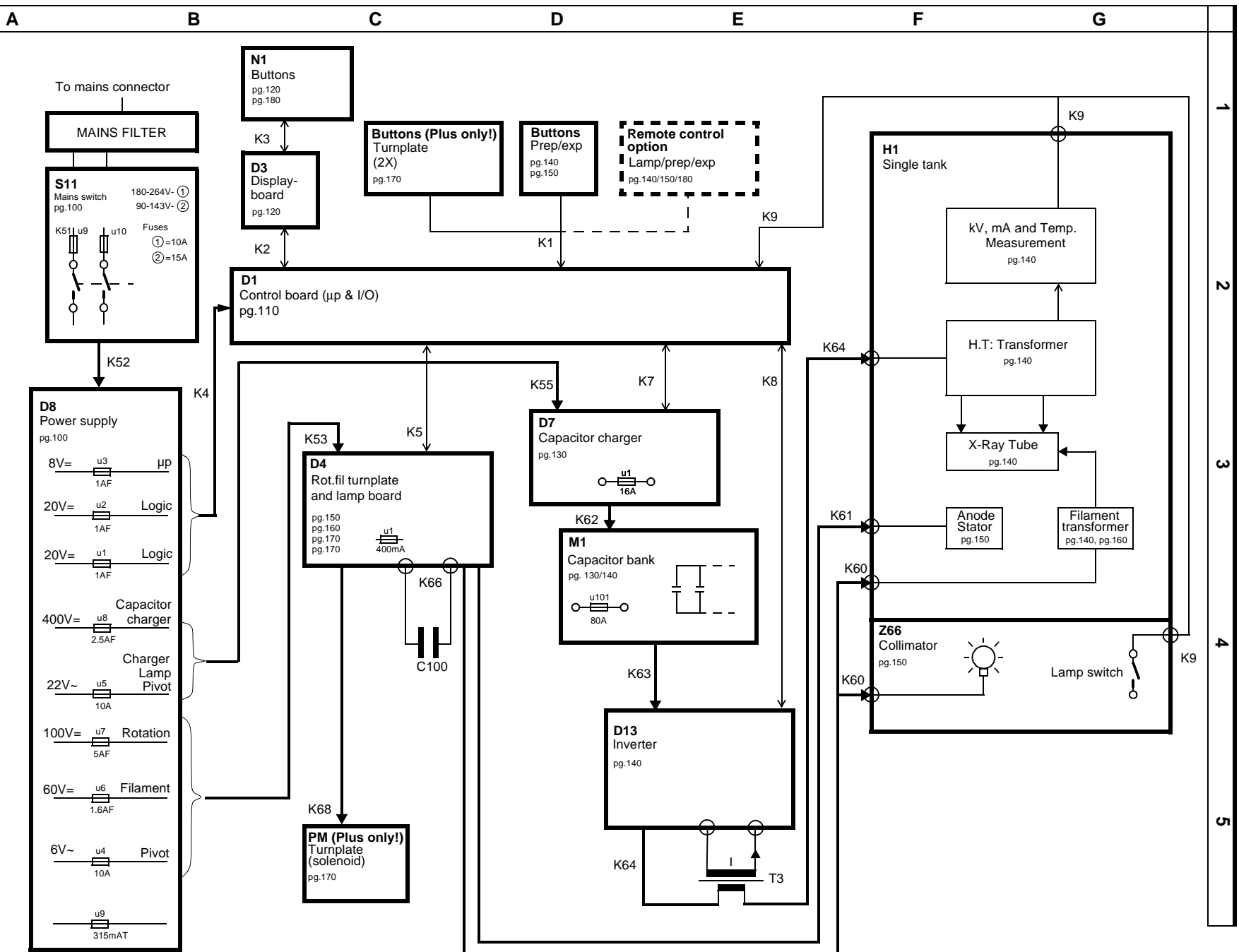
Notes on block diagram

- * The block diagram supports troubleshooting on board level, not on component level.
- * The function on D1, control board, described in sheet with number above 110 shows the common function of hard- and software.

The circuits are only models and do not necessarily exist physically.



Block diagram system-cable-fuses



List of boards

No.	Name	Part No	Type No	On sheet
D1	Control board	6167022	X037E	20, 100, 110, 120, 130, 140, 150, 160, 170, 180
D3	Display board	6167170	X037E	20, 100, 110, 120, 180
D4	Rotation, inverter, filament, lamp and turnplate board *	6077106	X037E	20, 100, 110, 150, 160, 170, 180
D7	Capacitor charger *	6077247	X037E	20, 100, 110, 130
D8	Power supply *	6077353	X037E	20, 100, 130, 150, 160, 170, 180
D13	HT-inverter *	6077270	X037E	20, 100, 110, 140
---	Remote control PCB board, option	6564202	X037E	20, 100, 110, 140, 150, 180

* Complete unit with heat sink

Measuring points

Name	PC-board	Page	Function
CAPNEG	D7	130	Negative side of capacitor bank
CAPPOS	D7	130	Positive side of capacitor bank
CAPVOL	D1	130	Voltage level in capacitor bank
CHARGEHIGH ²	D7	130	Charge with high power level
CHARGELOW ²	D7	130	Charge with low power level
CLEAROV ²	D7	130	Reset overvoltage blocking
DISCHARGE ²	D7	130	Discharge capacitor bank
FIL	D4	160	Trigger pulses to filament booster
FILVAL	D1	160	Current through filament transformer
FILVOL	D1	160	Supply voltage for filament heating
HT	D1	140	Tube voltage
HTD	D1	140	High tension asymmetry
HTNEG	D1	140	Negative part of high tension
HTPEAK	D1	140	Tube voltage peak value
HTPOS	D1	140	Positive part of high tension
INVA	D13	140	Trigger pulses to inverter
INVB	D13	140	Trigger pulses to inverter
LAMP ON	D4	180	Collimator lamp control
MAPOS	D1	140	Current through high tension unit. One part corresponds to the real tube current.
PIVOT ON	D4	170	Push turnplate down (Plus only!)
PIVOT HOLD	D4	170	Hold turnplate down (Plus only!)
RESET ²	D1	110	Reset signal for up
ROT	D1	150	Tube anode speed
ROTA	D4	150	Trigger pulses to inverter for anode speed
ROTB	D4	150	Trigger pulses to inverter for anode speed
ROT_VAL	D4	150	Tube anode speed

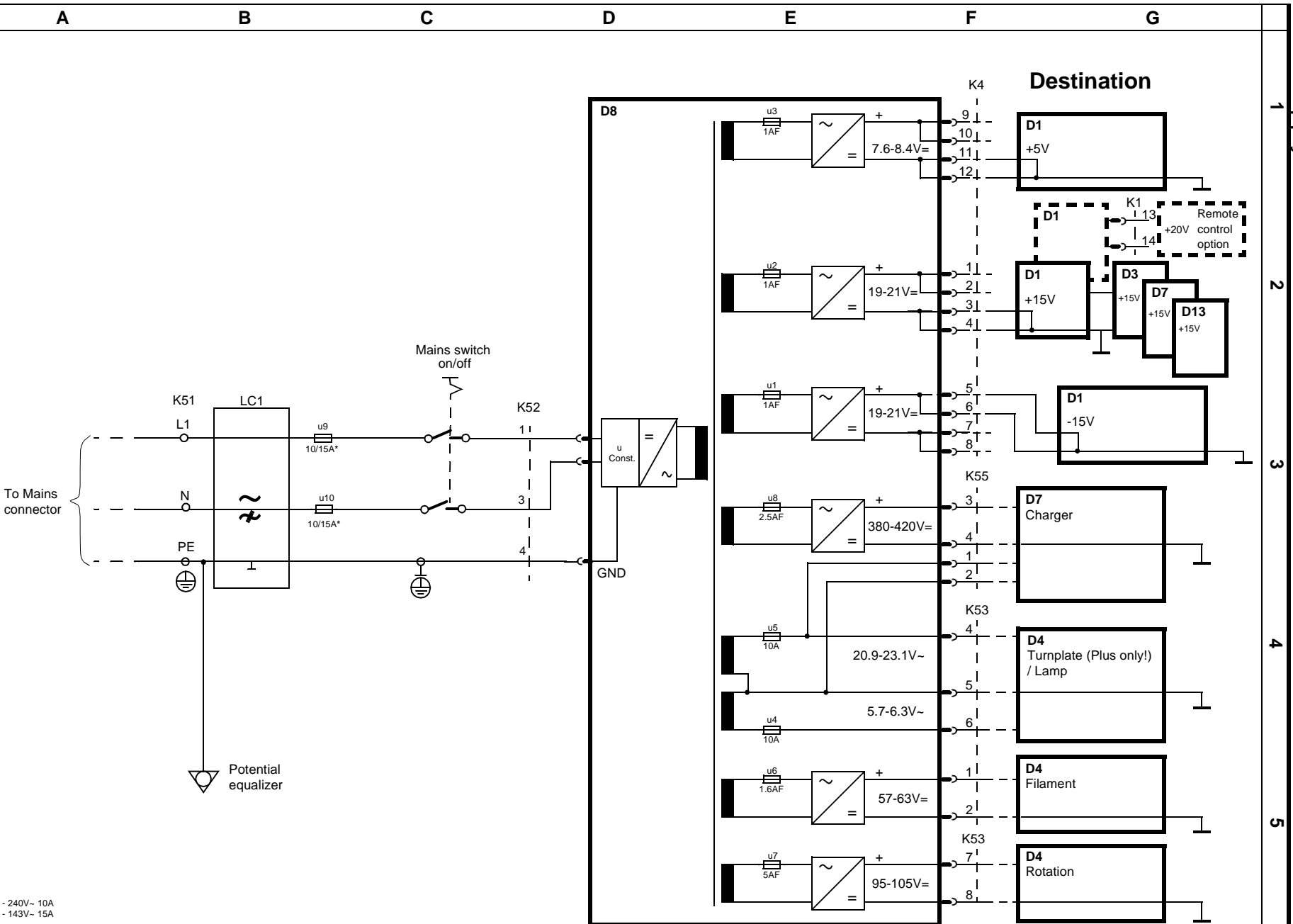
Power	PC-board	Page	Function
+5V, +15V, -15V, GND	D1	110	---
+5V, GND	D3	120	---
+5V, +15V, GND	D4	150	---
100VDC, 100VDCRET ¹	D4	150	---
60VDC, 60VDCRET ¹	D4	160	---
+5V, +15V, GND	D7	130	---
+5V, +15V, GND	D13	140	---

Notes!

1) 100VDCRET and 60VDCRET mean the "GND" side of the specified supply voltage

2) Active low function

Power supply



1

2

3

4

5

Measuring points:

Control board

+15V, +5V, GND, -15V: Supply voltage

CAPVOL: 1V \Rightarrow 82V in capacitor bank

FILVAL: 1V \Rightarrow 1.5A filament current

FILVOL: 1V \Rightarrow 14V filament voltage.

Normal = 4.3V \Rightarrow 60V

HTNEG: -1V \Rightarrow -10kV Negative part of high voltage.

HTPOS: 1V \Rightarrow 10kV Positive part of high voltage

HTD: \pm 1V/40kV High voltage asymmetry.

HTNEG + HTPOS = HTD

HT: 1V \Rightarrow 40kV Tube voltage

HTPEAK: 1V \Rightarrow 40kV Peak value of tube voltage

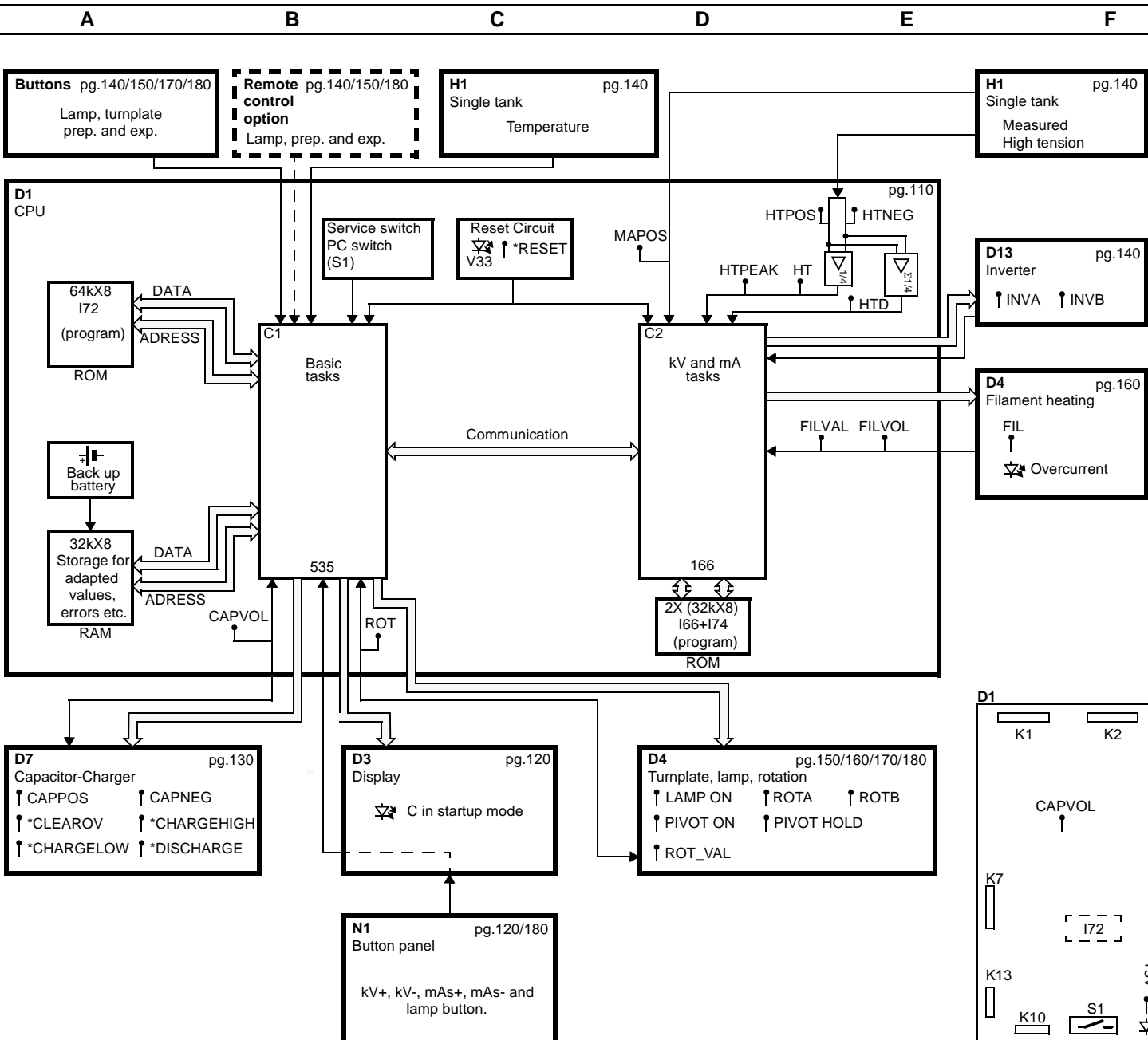
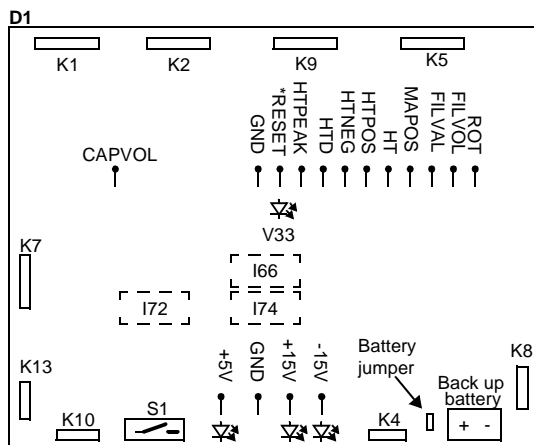
MAPOS: 1V \Rightarrow 100mA

NOTE: The HT and MAPOS signals are described on page 141.

ROT: See page 150.

Mainreset

***RESET:** Resets the C by an active low signal.



Display and user buttons

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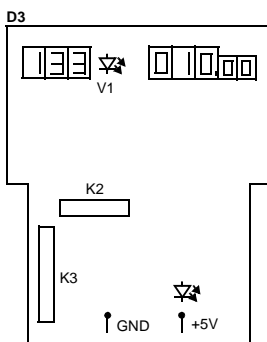
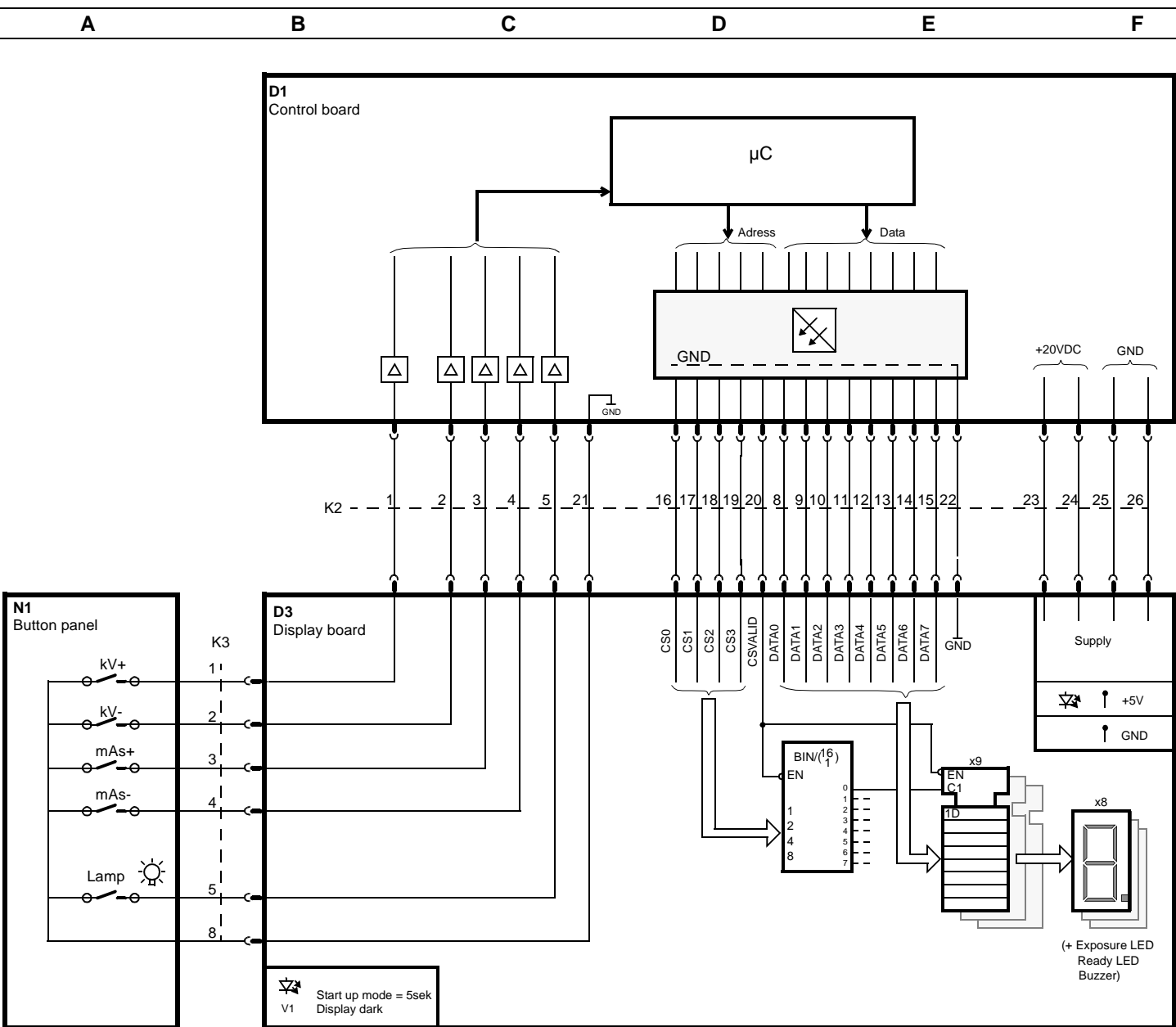
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Measuring points:

Display board**+5V, GND:** Supply Voltage

! When μC is in start up mode, display is dark and V1 lights. When startup mode is ready, V1 is turned off and normal displays are on.



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2

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Measuring points:

Capacitor charger

+15V, +5V, GND: Supply voltage
***CHARGELOW:** Reduced charging power.

***CHARGEHIGH:** Maximum charging power.

***DISCHARGE:** Discharge entire capacitor bank or just decrease level.

CAPPOS: Positive part of voltage in capacitor bank.

CAPNEG: Ground

***CLEAROV:** Reset the overvoltage blocking.

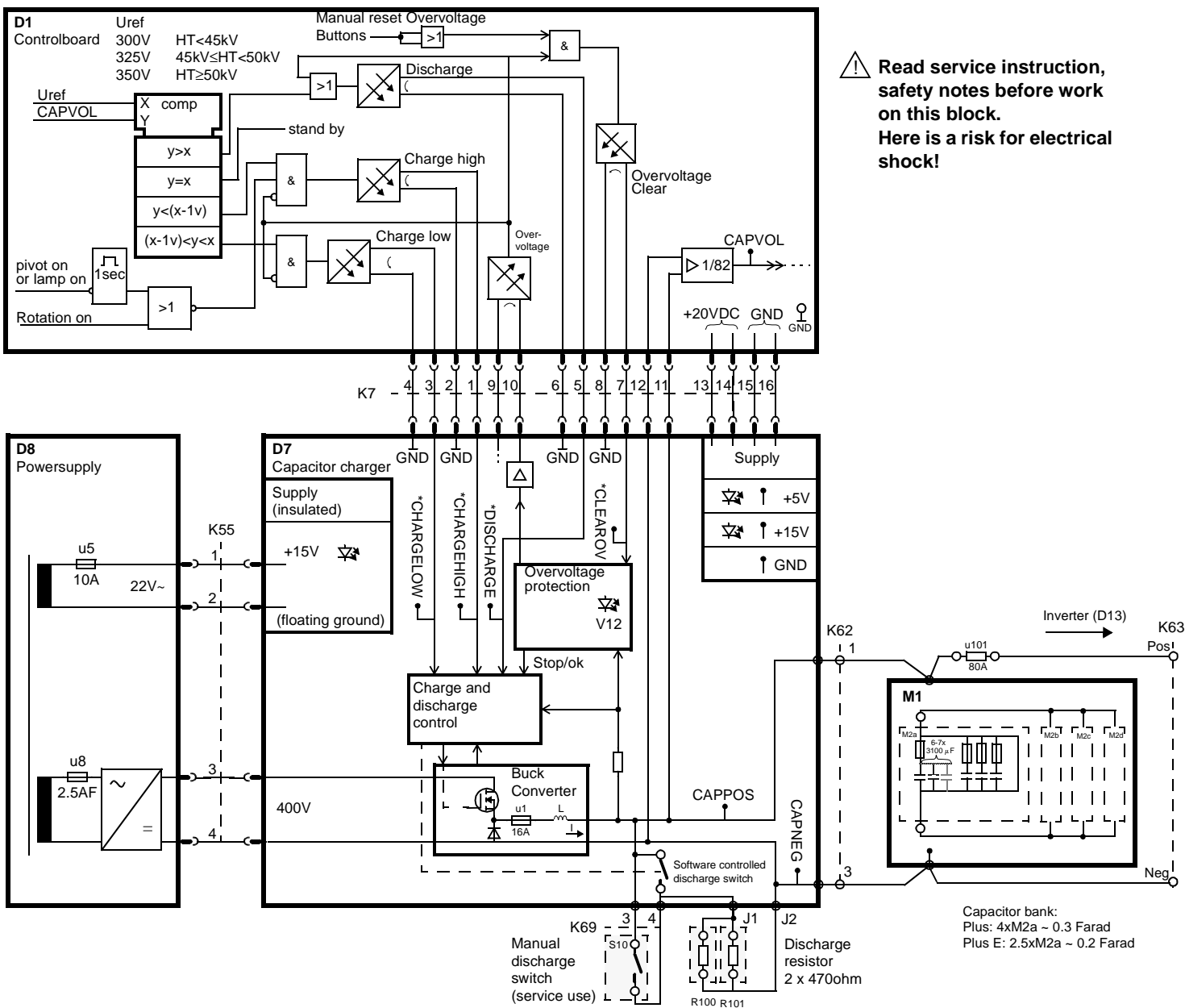
Control board

CAPVOL: 1V = 82V

Normal 4.3V \Rightarrow 350V

! The voltage in capacitor bank depends on selected kV.

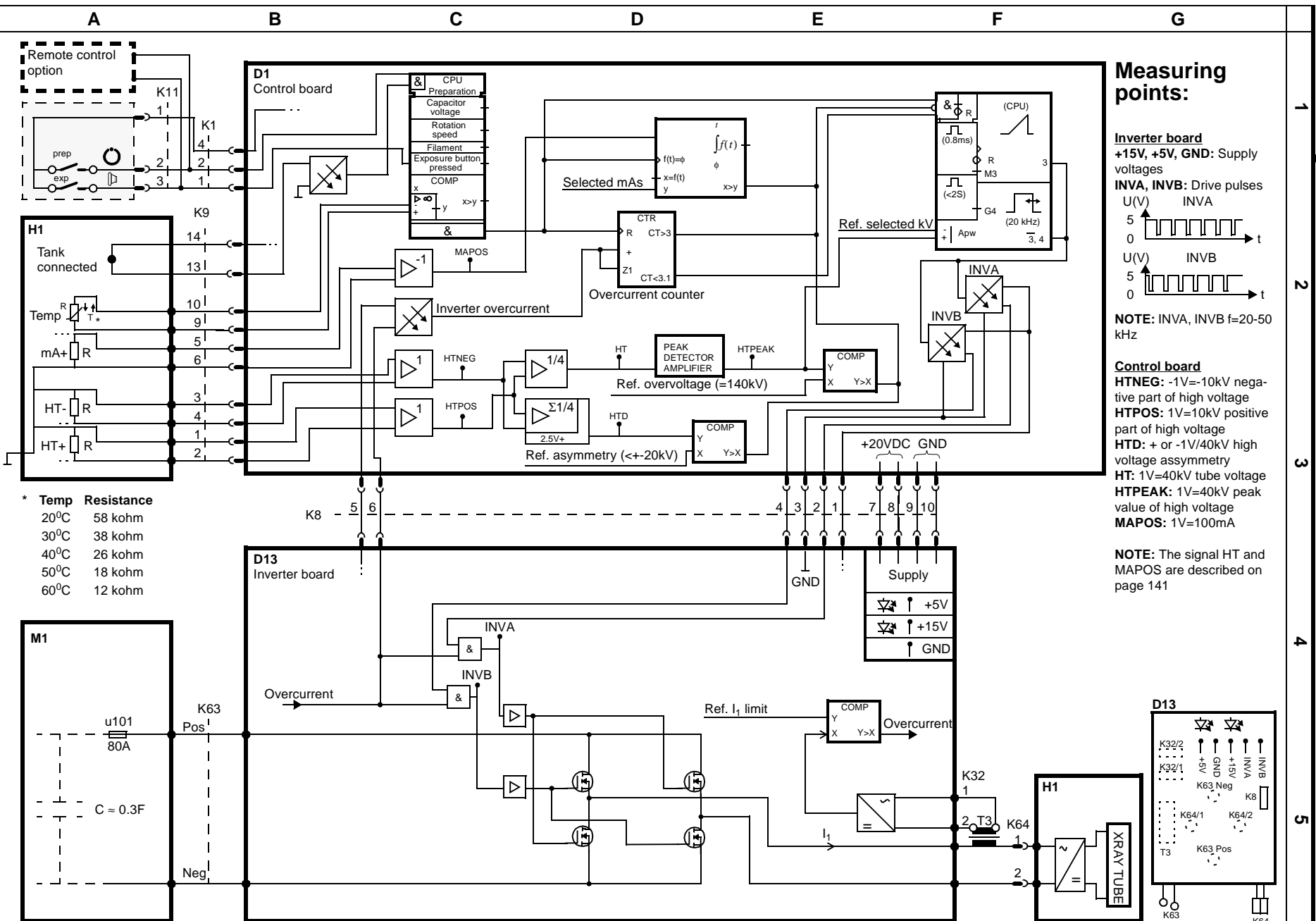
<45kV	Uc = 300V
$\geq 45\text{kV}$ to <50kV	Uc = 325V
$\geq 50\text{kV}$	Uc = 350V

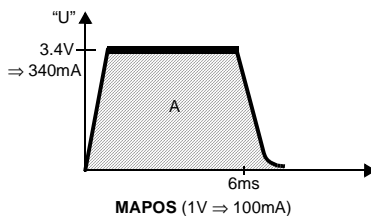
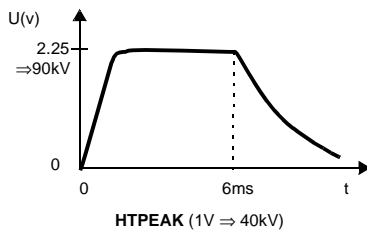


! Read service instruction, safety notes before work on this block.

Here is a risk for electrical shock!

Inverter & High tension transformer

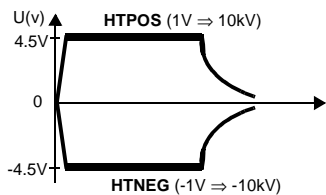


Example: Exposure results 90kV 2.0mAs measured on D1**Calculating mAs**

mAs = current x exposure time

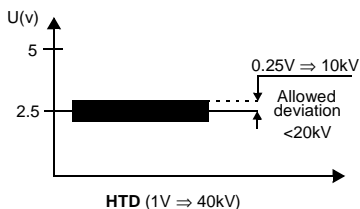
mAs = 340mA x 0.006s = 2.0mAs

NOTE: The signal contains high frequency 20-40 kHz and can cause sampling problems (Aliasing effect)



HTPOS-HTNEG = 4.5 - (-4.5) = 9V

9V ⇒ 90kV



Anode rotation

1

2

3

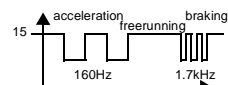
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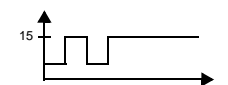
Measuring points:

Rotation board

+15V, +5V, GND, 100VDC, 100VDCRET: Supply voltage
ROTA: Drive pulse A 180° fase angular to ROTB.

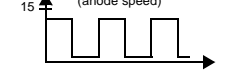


ROTB: Drive pulse B 180° fase angular to ROTA.



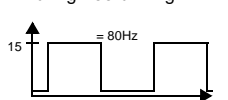
ROT_VAL: During freerunning.

= 160Hz => 9600 rpm (anode speed)

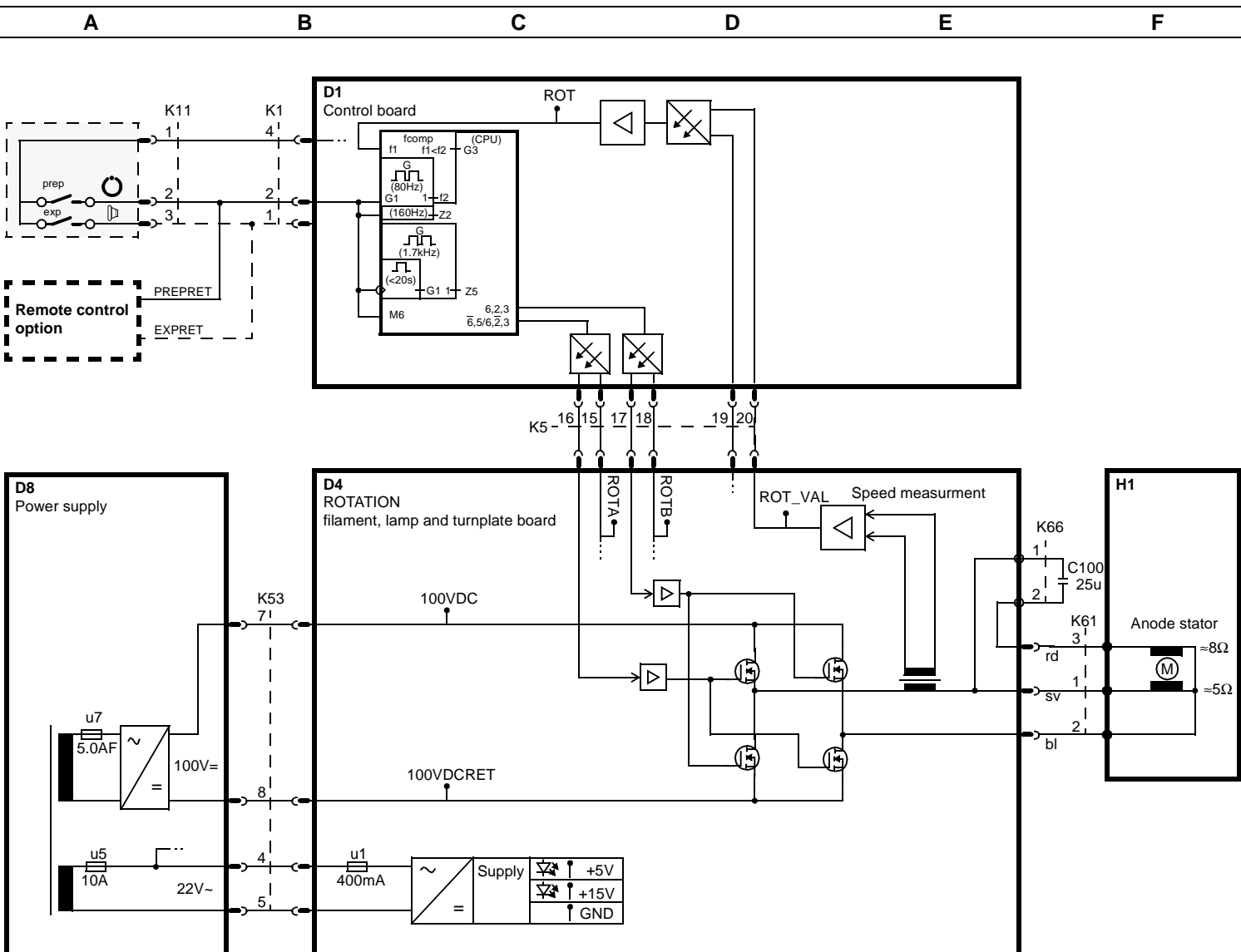
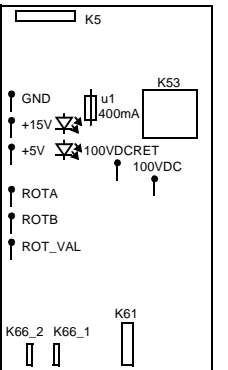


Control board

ROT: During freerunning



D4



1

2

3

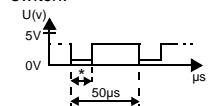
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Measuring points:

Filament board
+15V, +5V, GND, 60VDC, 60VDCRET: Supply voltage

FIL: Drive pulses to switch.



* Stand by = 6µs
 Preparation and exposure = 5.5-33µs

Control board

FILVOL: Measured supply voltage for filament.

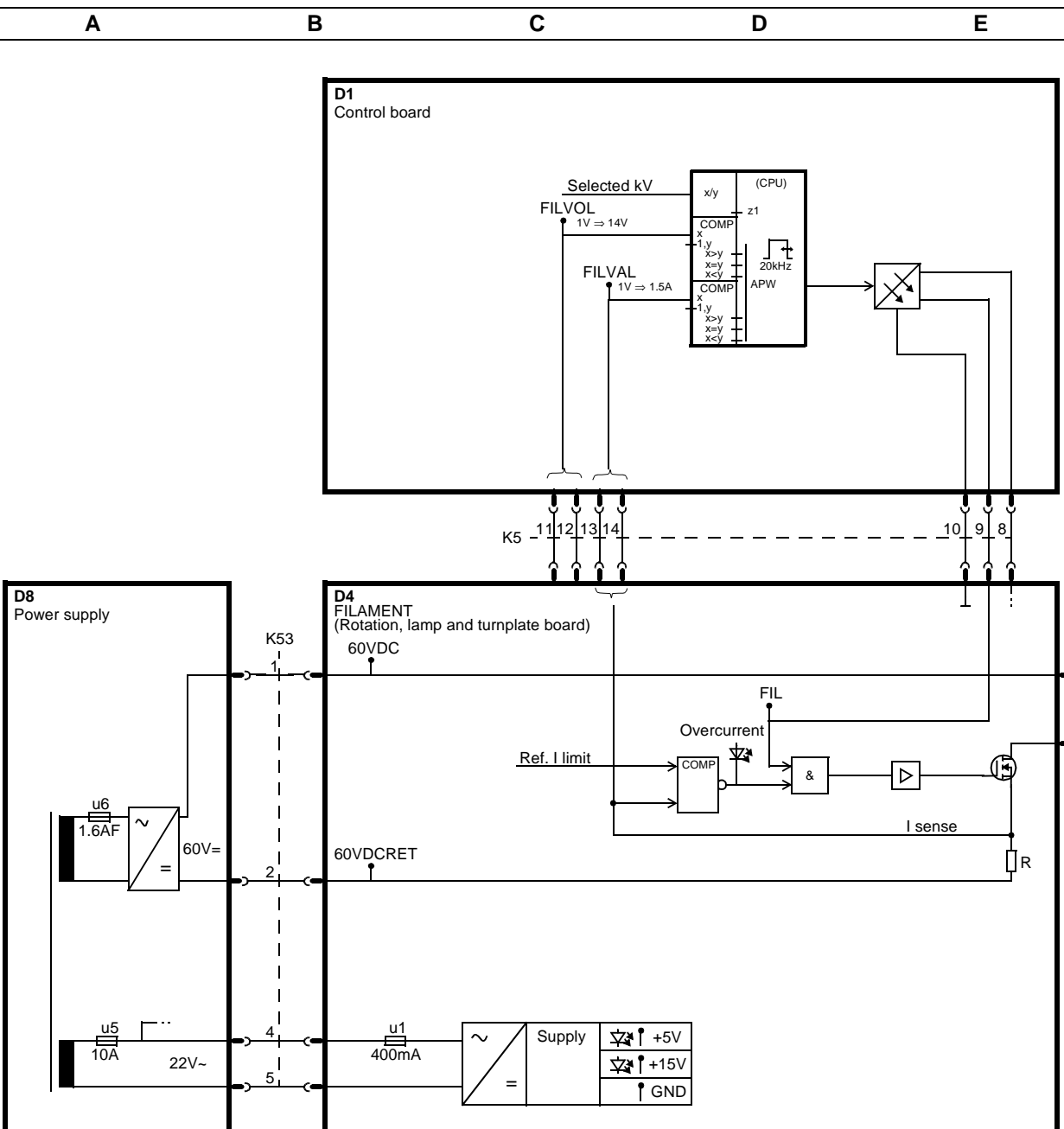
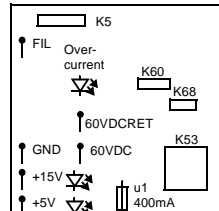
1V \Rightarrow 14V

4.3V \Rightarrow 60V

FILVAL: Measured current
 1V \Rightarrow 1.5A

Standby = 1V

Preparation = 2-3V

D4

Turnplate control

1

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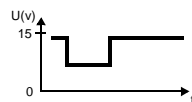
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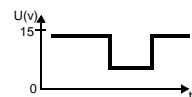
Measuring points:

Turnplate board
+15V, +5V, GND:
 Supply voltage

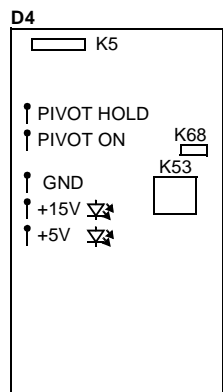
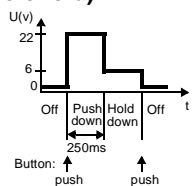
PIVOT ON:



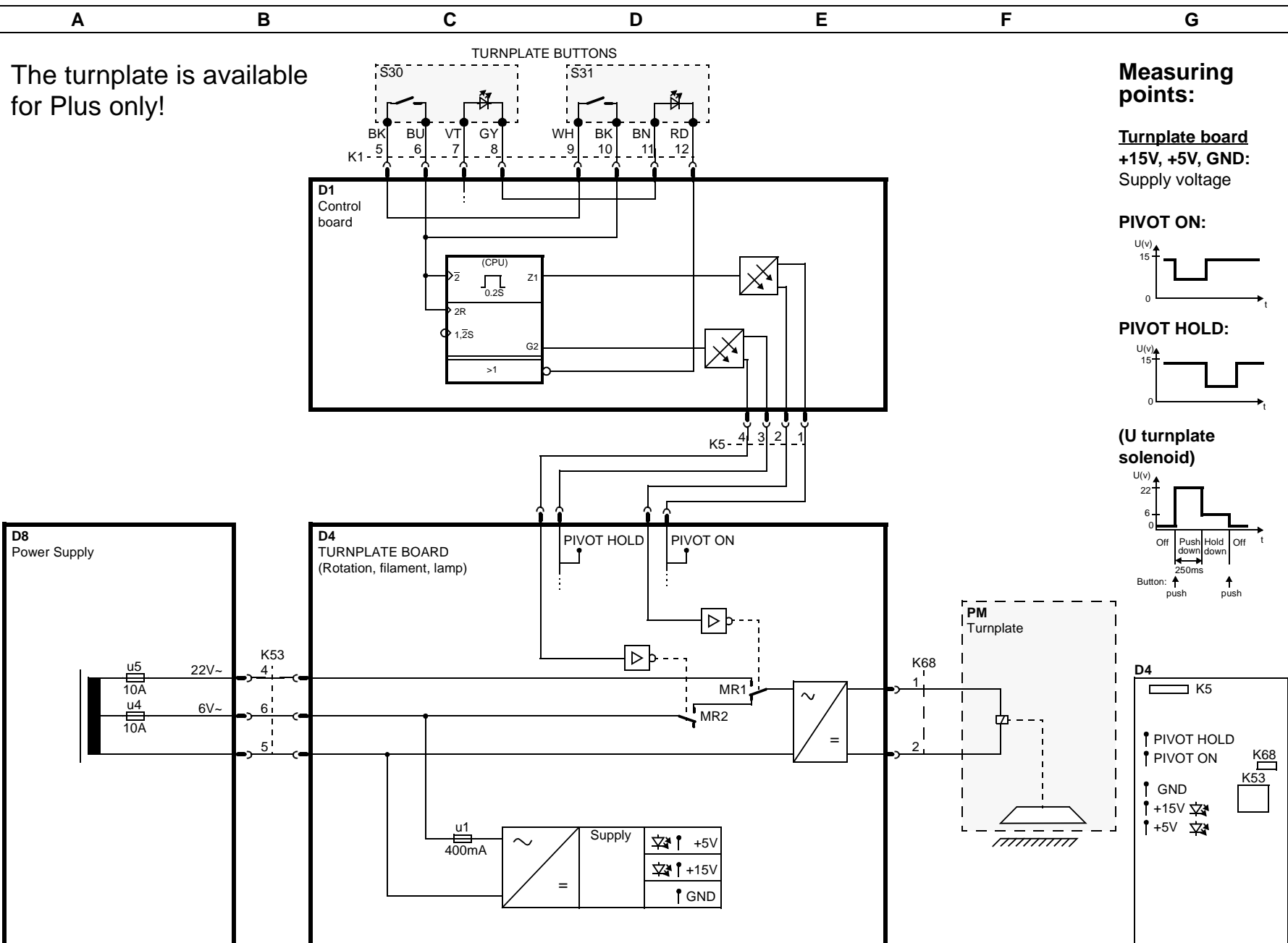
PIVOT HOLD:



(U turnplate solenoid)



The turnplate is available
 for Plus only!



1 2 3 4 5

Measuring points:**Lamp board****+15V, +5V, GND:** Supply voltage**LAMP ON:**